

supralabials, separated from orbital by a single row of infraorbitals. 10 infralabials. Temporal region covered with minute granules. Gular fan small (♀).

Body scarcely compressed, covered with small smooth granular scales, those on the belly a little larger. Tail cylindric, not much longer than head and body, covered with elongate, slightly keeled scales.

Limbs short, extended forwards, the extremity of longest finger reaches the nostril, and the extremity of longest toe the shoulder. Tibia two thirds the length of the head. Fingers and toes short, with well-developed dilatations.

Light grey above (not bleached), with pure white spots and a dark-brown network; tail encircled by complete dark-brown annuli. Beneath white, with a few dark spots.

	♀ (tail injured).	Half-grown.
Length from tip of snout to extremity of tail..	0·113	0·089
Length of head to ear-opening .....	0·014	0·011
Length of body from ear-opening to vent ...	0·041	0·028
Length of tail .....	0·058	0·050
Length of fore limb.....	0·0195	0·016
Length of hind limb .....	0·029	0·0215

Two specimens of this very distinct species have been recently obtained by the Royal Belgian Museum from M. A. Boucard, together with other Reptiles and Batrachians from Yucatan. Among these were several specimens of the highly interesting *Tripurion petasatus*, Cope (Proc. Acad. N. S. Phil. 1866, p. 127), a Frog which does not appear to have reached European collections before.

This *Anolis* is named in honour of my friend M. Léon Becker, the distinguished Belgian Arachnologist.

4. On the Mollusca procured during the 'Lightning' and 'Porcupine' Expeditions, 1868-70. (Part IV.<sup>1</sup>) By J. GWYN JEFFREYS, LL.D., F.R.S., F.Z.S.

[Received November 4, 1881.]

(Plates LXX., LXXI.)

CONCHIFERA (*concluded*).

Family XVI. MACTRIDÆ.

1. AMPHIDESMA CASTANEUM, Montagu.

*Donax castanea*, Mont. Test. Brit. App. p. 573, t. 17. f. 2.

*A. castaneum*, B. C. ii. p. 413, pl. viii. f. 1; v. p. 188, pl. xliii. f. 1.

<sup>1</sup> For Part I. see P. Z. S. 1878, p. 393; for Part II. see P. Z. S. 1879, p. 553; for Part III. see P. Z. S. 1881, p. 693.

'Porcupine' Exp. 1870 : Atl. St. Vigo B., Setubal B., C. Sagres, 26, 30, 36 ; Med. Algeiras B., 50, Benzert Road, Adventure Bank, off Rinaldo's Chair.

*Distribution.* W. Ireland and S. England to the Archipelago, Madeira, Canaries, and Azores ; 12-162 fms.

*Fossil.* Miocene : Vienna Basin, Hungary, S.W. France, Calabria, Madeira. Upper Tertiaries : S. France, Italy, Rhodes. Post-tertiary : Calabria.

*Erycina pusilla* of Philippi.

✓ 2. AMPHIDESMA CORNEUM, Poli.

*Mactra cornea*, Poli, Test. utr. Sic. i. p. 73, t. 19. f. 8-11.

*A. corneum*, B. C. ii. p. 414 ; v. p. 188.

'Porcupine' Exp. 1870 : Atl. St. 26 (valve).

*Distribution.* Carnac in Brittany (*J. G. J.*) to Syria, Adriatic, Black Sea ; 0-2 fms.

*Fossil.* Miocene : Vienna and Touraine Basins, Hungary. Upper Tertiaries : S. France, Italy. Post-tertiary : Calabria.

*Donax plebeia*, Pennant, *Amphidesma donacilla*, Lamarck, *Donacilla lamarchi*, Philippi.

✓ 1. MACTRA SOLIDA, Linné.

*M. solida*, L. S. N. p. 1126 : B. C. ii. p. 415, pl. viii. f. 2 ; v. p. 188, pl. xliii. f. 2, 2a.

'Lightning' Exp. St. 5 (typical) ; 4, 5, 7, Faroe Isles (var. *elliptica*).

'Porcupine' Exp. 1869 : 13, 15, Lough Foyle, 68, The Minch. 1870 : Atl. Vigo B., Setubal B., C. Sagres (var. *intermedia*) ; Med. Capo de Gata (valve, var. *elliptica*).

*Distribution.* Iceland and Finmark to N.W. Spain, Adriatic (on several authorities), Mediterranean ? ; 0-205 fms. The typical form is littoral, the variety *elliptica* from deeper water.

*Fossil.* Upper Tertiaries and Post-tertiary : Iceland, Norway, British Isles, Belgium ?, Germany ?, Biot, Italy ; 0-130 ft.

*M. vulgaris*, Chemnitz, *M. truncata*, Montagu, *M. castanea* and *M. crassatella*, Lamarck, *M. elliptica*, Brown, and other synonyms for recent and fossil varieties. Not *M. solidu* of Payraudeau, which is *M. stultorum*, var. *corallina*.

2. MACTRA SUBTRUNCATA, DaCosta.

*Trigonella subtruncata*, DaCosta, Brit. Conch. p. 198.

*M. subtruncata*, B. C. ii. p. 419 ; v. p. 188, pl. xliii. f. 3.

'Porcupine' Exp. 1869 : St. 9, 19 (valve). 1870 : Atl. 10, Vigo B., 13, C. Sagres, 30, 36, Tangier B. ; Med. Algeiras B., 50, G. Bona, Adventure Bank.

*Distribution.* Finmark to the Morea and Black Sea, Adriatic, Mogador, Madeira ?, Canaries ? ; 0-60 fms.

*Fossil.* Miocene : Vienna and Bordeaux Basins, Switzerland, Germany, Transylvania, Calabria. Pliocene : Coralline and Red

Crag, Belgium, S.W. & S. France, Italy, Greece, Algeria. Post-tertiary: Scandinavia, British Isles, Calabria, Rhodes; 0-50 ft.

*M. triangula* (Renier), Brocchi, and many other synonyms. *M. lateralis* of Say is closely allied, if it be not a variety of the present species.

I subjoin a description of the animal of a small variety from 5 to 7 fathoms in Balta Sound, Shetland:—BODY pale yellowish-white: *mantle* having its edges fringed with numerous short cirri, which are slightly tubercular at their tips: *tubes* conical, rather short, covered for the greater part with a leathery sheath, separate at their extremities, minutely speckled with bistre; orifices encircled by two rows of cirri, the outer cirri being longer and thicker than those forming the inner row, which latter are usually bent back on the margin of the sheath; all these cirri are more or less tubercular at the tips; valve of upper tube large and hyaline: *foot* white, tongue-shaped, long, and finely pointed.

✓ 3. MACTRA STULTORUM, Linné.

*M. stultorum*, L. S. N. p. 1126: B. C. ii. p. 422; v. p. 188, pl. xliii. f. 4.

'Porcupine' Exp. 1869: St. 2, Lough Swilly, L. Foyle. 1870: Med. Adventure Bank (fragment).

*Distribution*. S. Norway to Egypt and Black Sea, Adriatic, Mogador, Canaries; 0-35 fms. Not Red Sea, as given by Ehrenberg.

*Fossil*. Upper Tertiaries: British Isles, Italy.

1. LUTRARIA RUGOSA, Chemnitz.

*Maetra rugosa*, Chemn. Conch.-Cab. vi. p. 236, t. 24. f. 236.

'Porcupine' Exp. 1870: Atl. St. Vigo B. Valves rather abundant on the shore, as well as at Cadiz, whence Chemnitz received it.

*Distribution*. Lusitanian coasts, Gibraltar, various parts of the Mediterranean on the European and African shores, Mogador, Canaries; 0-4 fms. According to Messrs. Adams the only habitat for this shell is the coast of Guinea!

*Fossil*. Miocene: Vienna and Bordeaux Basins, Switzerland. Upper Tertiaries: Bracklesham, Biot, Italy, Greece, Rhodes. Post-tertiary: Selsea.

It is the type of Gray's genus *Eastonia*; but there is no sufficient character to separate it from *Lutraria*.

✓ 2. LUTRARIA ELLIPTICA, Linné.

*Maetra lutraria*, L. S. N. p. 1126.

*L. elliptica*, B. C. ii. p. 428, pl. viii. f. 3; v. p. 188, pl. xliv. f. 1.

'Porcupine' Exp. 1870: Med. St. 50.

*Distribution*. Norway to Malta and the Morea, Adriatic; 0-22 fms.

*Fossil*. Upper Tertiaries: Coralline and Red Crag, Belgium, S.W. France, Italy, Morea. Post-tertiary: Lancashire, Scotland, Calabria, Rhodes.

Another short account of the animal, from my own observation, may not be useless. It was taken from a specimen which connected the typical form with the variety *alterutra*=*L. gracilis*, Conti. BODY yellowish-white: *mantle* very thick; margin protruded beyond the front edges of the shell: *tubes* united throughout, and encased in a membranous sheath, which extends far beyond the tubes when the latter are not in action; both tubes are mottled with reddish-brown; they are nearly equal in size, and are studded with tubercles (which are occasionally branched) at their orifices: *foot* yellowish-brown, tongue-shaped, very large and fleshy.

Mr. Duprey says he has seen a specimen extend its tubes 5 inches beyond the shell. Both he and Mr. McAndrew have found this species living in company with the next.

### 3. LUTRARIA OBLONGA, Chemnitz.

*Mya oblonga*, Chemn. Conch.-Cab. vi. p. 27, t. 2. f. 12.

*L. oblonga*, B. C. ii. p. 430; v. p. 189, pl. xlv. f. 2.

'Porcupine' Exp. 1870: Med. St. 50.

*Distribution*. S. England and W. Ireland to the Mediterranean and Adriatic, Mogador, Senegal, Cape Verd Is.; 0-20 fms.

*Fossil*. Miocene: Austro-Hungarian Empire, Switzerland, Bordeaux Basin, S. France. Pliocene: Coralline Crag, Italy. Post-tertiary: Belfast, Selsea, Rhodes.

The terminal cirri are cream-colour with a purplish base. It is difficult to distinguish some specimens of this species from *L. elliptica*.

### ✓ 1. SCROBICULARIA PIPERATA (Belon), Gmelin.

*Mactra piperata*, L. S. N. ed. Gmel. p. 3261.

*S. piperata*, B. C. ii. p. 444, pl. viii. f. 4; v. p. 189, pl. xlv. f. 5.

'Porcupine' Exp. 1869: St. Galway B.

*Distribution*. Bergen to Sicily, Adriatic, Mogador, Senegal?, Japan; 0-4 fms.

*Fossil*. Upper Tertiaries: Red? and Mammalian Crag, Sicily. Post-tertiary: Scandinavia, British Isles, N.W. Germany; 0-50 ft.

*Chama piperata* of Belon and Aldrovandi, with 15 synonyms. Sold in the markets of Venice and Trieste (Senoner).

### ✓ 2. SCROBICULARIA COTTARDI, Payraudeau.

*Lutraria cottardi*, Payr. Cat. Moll. Corse, p. 28, t. 1. f. 1, 2.

'Porcupine' Exp. 1870: Atl. St. Vigo B. (hinge-fragment).

*Distribution*. Gibraltar to the Ægean and Adriatic; 0-20 fms.

*Fossil*. Post-tertiary: Morea.

Syn. *Amphidesma sicula*, G. B. Sowerby, sen.; *S. trigona*, Brusina, is a variety; *Tellina rubiginosa*, Poli, and *Erycina ovata*, Philippi, are the younger state.

### ✓ 3. SCROBICULARIA NITIDA, Müller.

*Mya nitida*, Müll. Prodr. Zool. Dan. p. 245.

*S. nitida*, B. C. ii. p. 436; v. p. 189, pl. xlv. f. 2.

'Porcupine' Exp. 1869: St. 1, 2, 10, 17, 18, Donegal B., 61,



Little Minch. 1870 : Atl. 3, Vigo B., 13, 16, 17*a*, Setubal B., 24, C. Sagres, 26, 29, 30 ; Med. 45.

*Distribution.* Iceland and Loffoden I. to Sicily and the Adriatic ; 3-400 fms.

*Fossil.* Upper Tertiaries : S. Italy. Post-tertiary : Norway ; 0-10 ft.

Besides the synonyms given in 'British Conchology,' this species is *Erycina fabula* of Brusina.

BODY whitish, with minute flake-white specks : *mantle* having its edges closely fringed with short but rather stout tentacular processes or cirri, which are studded with tubercular points and are sometimes branched : *tubes* separate throughout, remarkably long and cylindrical ; incurrent or lower tube microscopically veined lengthwise and marked on the inner side with two white lines ; its orifice is furnished with slight tooth-like points ; orifice of excurrent tube contracted when at rest : *foot* tongue-shaped, thick and expansile.

#### ✓ 4. SCROBICULARIA LONGICALLUS, Scacchi.

*Tellina longicallus*, Sc. Notizie, p. 16, t. 1. f. 7.

'Porcupine' Exp. 1869 : St. 5, 37, 38, 45-45*b*, Little Minch. 1870 : Atl. 1, 3, 6, 8, 9, Vigo B., C. Sagres, 26-34, 36, Tangier B. ; Med. 45, Capo de Gata, 51, 55, Adventure Bank, off Rinaldo's Chair.

*Distribution.* Loffoden I. to the Ægean and Adriatic, off the Canaries ('Challenger' Exp.), E. Mexico (Blake's Exp.) ; 50-1125 fms.

*Fossil.* Upper Tertiaries : Biot, Italy. Post-tertiary : Norway.

*Syndosmya tellinella*, Seguenza ; in the younger state *Ligula profundissima*, Forbes. Philippi misquoted Scacchi's specific name, and called it "*longicallis*" instead of *longicallus*, which is more intelligible if not more classical than the other.

This shell is larger and more compressed and thinner than *S. alba*, is not so oval, and is somewhat flexuous at the posterior side ; the cartilage and its pit are elongated and much narrower. In *S. alba* the pit is spoon-shaped. The lateral teeth are far longer in the present species. Excellent figures of *S. longicallus* are given in Professor G. O. Sars's work on the arctic Mollusca of Norway. It is also a British species, and was regarded by me as a large form or variety of *S. alba*. The range of depth at which *S. longicallus* has been found living is very remarkable, extending according to the 'Porcupine' Expedition from 20 to 2435 fms.

#### 5. SCROBICULARIA ALBA, W. Wood.

*Macra alba*, W. Wood, in Linn. Trans. vi. p. 165, t. xvi. f. 9-12.

*S. alba*, B. C. ii. p. 438, pl. viii. f. 4 ; v. p. 189, pl. xlv. f. 3.

'Porcupine' Exp. 1869 : St. 3, North Channel, 40 (var. *radiata*), near Belfast. 1870 : Atl. Vigo B., C. Sagres ; Med. Cartagena B., 50, G. Bona.

*Distribution.* Finmark to Sea of Marmora, Adriatic, Mogador ; 2-400 fms. Bay of Biscay ('Travailleur' Exp.) ; 504-645 fms.

*Fossil.* Miocene: Vienna Basin. Upper Tertiaries: English and Belgian Crags, S. France, Italy. Post-tertiary: Scandinavia, British Isles, Calabria, Rhodes; 0-460 ft.

There are many synonyms, including *Tellina apelina* of Renier, *Muctra boysii* of Montagu, and *Erycina renieri* and *E. similis* of Philippi. Renier never described this species. He seems to have taken the name *apelina* from Gmelin, who altered it from *opalina* of Chemnitz, a very different shell said to inhabit the Nicobar Isles.

✓ 6. SCROBICULARIA PRISMATICA, Montagu.

*Ligula prismatica*, Mont. Test. Brit. Suppl. p. 23, t. 26. f. 3.

*S. prismatica*, B. C. ii. p. 435; v. p. 189, pl. xlv. f. 1.

'Porcupine' Exp. 1869: St. 6, 14, 23a, 25, North Channel, 33, 35, 40, 51, 68. 1870: Atl. 10, 16; Med. 50, G. Bona, Benzert Road, G. Tunis, Adventure Bank.

*Distribution.* Iceland and Hammerfest to the Ægean and Adriatic; 0-150 fms.

*Fossil.* Upper Tertiaries: Coralline and Red Crag, Belgium, Biot, Italy. Post-tertiary: Norway, Scotland, Calabria.

*Tellina angulosa* of Renier, but not described, nor Gmelin's species of that name; *T. stricta*, Brocchi, *Ligula donaciformis*, Nyst, and *Erycina vitrea*, Danilo and Sandri.

Family XVII. SOLENIDÆ.

✓ 1. SOLECURTUS SCOPULA, Turton.

*Psammobia scopula*, Turt. Conch. Brit. p. 98, pl. vi. f. 11, 12. (1822).

*S. candidus*, B. C. iii. p. 3; v. p. 190, pl. xlvi. f. 1.

'Porcupine' Exp. 1870: Med. St. 50.

*Distribution.* Shetland Is. to the Morea, Adriatic, Madeira, Canaries; 0-80 fms. It has not been noticed in that part of the Norwegian seas which is in the same latitude as Shetland.

*Fossil.* Upper Tertiaries: Belgium, Italy. Post-tertiary: Scotland, Rhodes.

I give a fuller description of the animal:—BODY dirty white, with a faint tinge of brown: *mantle* thick, protruded beyond the valves of the shell; edges finely and minutely ciliated: *tubes* united in a fleshy sheath to within a short distance from their extremities, where they diverge and become strangulated or corrugated; both tubes are finely ciliated in longitudinal rows; orifices fringed with short papillæ; the incurrent or larger tube is sometimes speckled with orange towards the point; the excurrent tube is somewhat narrower, but often longer than the other; the tubes vary in their relative length: *foot* tongue-shaped, very thick and fleshy. Inhabits the sand at low-water mark, Herm.

I must repeat my doubt that the *Solen candidus* of Renier was this species, or any thing more than a white variety of *Solecurtus strigilatus*. Renier's specific name has not been adopted by later writers on Mediterranean conchology. Scacchi in 1836 described

and figured the present species as *Solen multistriatus*; but that was fourteen years after Turton. The late Dr. Nardo referred Renier's shell to *Solecortus candidus* of de Blainville; the specific name given by the latter, however, was *albus* (Dict. Sc. Nat. xlix. p. 420); and the date of his publication is 1827, five years after that of Turton.

✓ 2. SOLECURTUS ANTIQUATUS, Pulteney.

*Solen antiquatus*, Pult. Cat. Dors. p. 28, pl. iv. p. 5.

*Solecortus antiquatus*, B. C. iii. p. 6, pl. i. f. i.; v. p. 190, pl. xlvi. f. 2.

'Porcupine' Exp. 1870: Atl. St. 10, 13, Setubal B., C. Sagres, 36, Tangier B.; Med. Capo de Gata, Cartagena B., 50, 50 a, Benzert Road, G. Tunis, Adventure Bank.

*Distribution.* Bohuslän (S. Sweden) to the Morea, Adriatic, Madeira, Canaries; 4-50 fms.

*Fossil.* Miocene: Vienna Basin and throughout a considerable part of the European continent. Upper Tertiaries: Coralline Crag, Belgium, Biot, Italy, Morea. Post-tertiary: Belfast, Calabria, Rhodes, Cyprus.

Not *Solen coarctatus* of Gmelin. The habitat given by Chemnitz (from whose figure Gmelin named it) was the Nicobar Isles, and the size  $2\frac{1}{4}$  inches.

✓ CERATISOLEN LEGUMEN, Linné.

*Solen legumen*, L. S. N. p. 1114.

*C. legumen*, B. C. iii. p. 10, pl. i. f. 2; v. p. 190, pl. xlvi. f. 3.

'Porcupine' Exp. 1870: Med. St. 50.

*Distribution.* Scandinavia (*Müller*), S. & W. England and Ireland to Egypt, Adriatic, Mogador, Senegal?, Guinea?, Port Said?; 0-20 fms.

*Fossil.* Miocene: Vienna and Bordeaux Basins, Switzerland. Upper Tertiaries: Italy. Post-tertiary: Belfast, W. Scotland, Rhodes.

1. SOLEN PELLUCIDUS, Pennant.

*S. pellucidus*, Penn. Br. Zool. iv. p. 84, pl. lxvi. f. 23; B. C. iii. p. 14; v. p. 190, pl. xlvi. f. 4.

'Porcupine' Exp. 1869: St. 2, 9, 18, 33, 68, Little Minch, near Belfast. 1870: Atl. Tangier B.; Med. 51, G. Bona (var. minor, rector = *S. tenuis*).

*Distribution.* Loffoden Is. to the Ægean and Adriatic; 0-85 fms.

*Fossil.* Upper Tertiaries: Coralline and Red Crag, Belgium, Italy. Post-tertiary: Aldeby, Belfast.

*S. pygmaeus*, Lamarck: Var. *S. tenuis*, Philippi: *Cultellus sut-tonensis*, Searles Wood; not his *C. tenuis* (afterwards *C. cultellatus*). Not *S. pellucidus*, Spengler, from Chemnitz.

✓ 2. SOLEN ENSIS, L.

*S. ensis*, L. S. N. p. 1114: B. C. iii. p. 16; v. p. 190, pl. xlvii. f. 1.

'Porcupine' Exp. 1870: Med. St. 50, 50 a.

*Distribution.* Finmark and Faroe Is. to Sicily, Adriatic, Black Sea; 0-23 fms. Philippi, in his letter to Scacchi, dated 2nd Nov. 1844, stated that this species, as well as *S. siliqua*, from the German Ocean and North Atlantic, were probably different from those of the Mediterranean; but he gave no reason for his opinion.

*Fossil.* Miocene: Madeira. Upper Tertiaries: Iceland, Coralline and Red Crags, Belgium, Italy. Post-tertiary: Norway, British Isles, Calabria; 0-80 fms. Not *S. ensis* of Philippi, from the Tertiaries of N.W. Germany, which is the *S. rollei* of Hörnes.

Mr. David Robertson tells me that, during a very low spring-tide at Cumbrae, he found three living specimens fixed upright in the sand, with about an inch and a half of the shells exposed, to which portion in each of the specimens two or three common mussels were attached, so as to completely prevent the Solens getting further down or burrowing. They appeared to be healthy.

✓ 3. SOLEN VAGINA, Linné.

*S. vagina*, L. S. N. p. 1113: B. C. iii. p. 20; v. p. 190, pl. xlvii. f. 3.

'Porcupine' Exp. 1870: Atl. C. Sagres, 26 (fragments).

*Distribution.* Norway to Egypt, Black Sea, Adriatic, Red Sea?, Azores; 0-10 fms.

*Fossil.* Miocene: Vienna and Bordeaux Basins, Switzerland, Poland, Calabria. Upper Tertiaries: S. France, Italy, Algeria. Post-tertiary: Belfast, Sicily, Morea.

*S. marginatus*, Pulteney. The habitat given by Linné is "M. Europæo, Indico." The Indian species has been named *S. truncata* by W. Wood.

Family XVIII. PANDORIDÆ.

✓ PANDORA INÆQUALVIS, Linné.

*Tellina inæqualvis*, L. S. N. p. 1118.

*Pandora inæqualvis*, B. C. iii. p. 24, pl. i. f. 4; v. p. 190, pl. xlvi. f. 1, 1a.

'Porcupine' Exp. 1869: St. 1, 6, 10, 13, 14, 23a, 25, 45a, 45b, Little Minch (all var. *pinna*). 1870: Atl. 16, Vigo B., 13, Setubal B., C. Sagres, Tangier B.; Med. Algesiras B., Cartagena B., G. Bona, G. Tunis, Adventure Bank (all vars. *pinna* and *intermedia*).

*Distribution.* Spitzbergen and Arctic Ocean, Siberian coasts, and N.E. America (as *P. glacialis*) to the Ægean, Adriatic, Mogador, Madeira, and Canaries (as *P. inæqualvis* and *P. pinna* or *obtusa*); type, laminarian zone; vars. *glacialis* and *pinna* or *obtusa*, coralline zone to 130 fms. An intermediate form occurs on the western coast of France and at Corunna. Although this species is not uncommon off the coasts of Shetland, it has not been noticed by modern writers in any part of the Scandinavian seas. Chemnitz said that, according to Gronovius, it inhabits the coast of Norway.

*Fossil.* Miocene: Vienna Basin and Switzerland. Pliocene: Co-



ralline and Red Crag, S. France and Italy. Post-tertiary: Hopton in Suffolk and Calabria.

1. *LYONSIA NORVEGICA*, Chemnitz.

*Mya norvegica*, Chemn. Conch.-Cab. x. p. 345, t. 170. f. 1647, 1648.

*L. norvegica*, B. C. iii. p. 29, pl. ii. f. 1; v. p. 190, pl. xlvi. f. 2.

'Porcupine' Exp. 1869: St. 1, 10, 14, 18, 23a, 35, 68. 1870: Med. G. Bona, Benzert Road, Rassel Amoush.

*Distribution*. Loffoden I. to the Ægean and Adriatic, and (according to Dr. Philip Carpenter), Seniavine Straits in the North Pacific; 2-162 fms.

*Fossil*. Pliocene: Sicily.

Not *L. norvegica* of Middendorff, which is *L. arenosa*, but probably *Mya membranacea* of Gmelin from Müller's 'Prodromus,' and *Osteodesma inflatum* of Danilo and Sandri. For other synonyms see 'British Conchology,' iii. pp. 31, 32.

2. *LYONSIA FORMOSA*<sup>1</sup>, Jeffreys. (Plate LXX. fig. 1.)

SHELL oval, equivalve, pearly, thin, and semitransparent: *sculpture*, numerous and close-set rows of minute tubercles, arranged lengthwise; the posterior side is also marked with from six to eight diagonal flexuous ribs or folds, of which the innermost is the strongest and forms a keel; there are, besides, traces of other flexuous ribs in the middle and on the anterior side; the posterior side has likewise a few rows of short but irregular prickles as well as the tubercles: *colour* silvery-white: *epidermis* filmy and only perceptible on the edges of the shell: *margins* rounded on the anterior side, gently curved in front, with a slight sinuosity and contraction towards the posterior side, which is somewhat truncated; dorsal margin incurved on each side of the umbo: *beaks* triangular, inclined to the anterior side: *ossicle* pearly, heart-shaped or notched at the posterior end: *cartilage* brownish-yellow, enclosing the ossicle; pit oval, with thickened edges: *hinge-plate* long and thick: *inside* highly polished and iridescent: *muscular scars* broad and distinct. L. 0.4, B. 0.65.

'Porcupine' Exp. 1869: St. 23. 1870: Atl. 3a; Med. 55.

*Distribution*. 'Challenger' Exp. off Gomera, Canaries, 620 fms.; off Carysfort in the Gulf of Mexico (*Pourtales*), 349 fms.; Bay of Biscay ('Travailleur' Exp.), 552-600 fms.

A most lovely shell, and one of the prizes of the deep-sea dredger, who might be classed in the former part of Wordsworth's category as

"They who rather dive than soar."

3. *LYONSIA ARGENTEA*<sup>2</sup>, Jeffreys. (Plate LXX. fig. 2.)

SHELL triangularly oval, rather solid, opaque, and of a dull hue: *sculpture*, a few slight ribs longitudinally radiating from the beak in the right valve, none in the other valve, which, however, is strength-

<sup>1</sup> Beautiful.

<sup>2</sup> Silvery.



ened by a rib on the upper part of the posterior side; the whole surface is covered with minute prickly tubercles arranged lengthwise in numerous rows: colour yellowish-white: epidermis inconspicuous: margins in front slightly curved, fibrous at the edges: beaks triangular, somewhat incurved; umbones prominent: hinge-plate thick: inside of a silvery lustre. L. (about) 0·5, B. (about) 0·8.

'Porcupine' Exp. 1869: St. 23a. 1870: Atl. 27-29. Fragments only.

*Distribution.* Palermo (*Monterosato*); 65 fms. (120 m.).

#### 1. PECCHIOLIA ABYSSICOLA, M. Sars.

*Lyonsiella abyssicola*, M. Sars, Vid.-Selsk. Förh. 1868, p. 257.

*P. abyssicola*, G. O. Sars, 'On some remarkable Forms of Animal Life from the great deeps of the Norwegian coast,' i. p. 25, pl. iii. f. 21-43; Moll. Reg. arct. Norv. p. 82, t. 20. f. 5, a-d.

'Porcupine' Exp. 1869: St. 1, 6, 23a, 39. 1870: Atl. 16, 17, 17a.

*Distribution.* Spitzbergen to the Skagerack, 'Valorous' Exp., Davis Strait, New England; 50-1450 fms.

BODY yellowish, streaked with pink at the sides: mantle thick: tubes sessile; the larger tube is wide and exposes the gills, and it is fringed with a few short orange-colour tentacular cirri; the smaller or excretal tube (which is situate at the broader end of the shell) is circular: foot conical and white, protruded at the narrower end of the shell.

I feel myself compelled by the laws of scientific nomenclature to use the generic term *Pecchiolia* instead of *Verticordia*. The latter name was proposed in 1844 by Mr. Searles Wood for a Crag shell which was figured by Mr. James Sowerby in his 'Mineral Conchology' (plate 639); but, in consequence of the publication of the second volume of Philippi's work on the Mollusca of the two Sicilies in the same year (1844), Mr. Wood and Mr. Sowerby gave up *Verticordia* and adopted *Hippagus*, under the supposition, which they shared with Philippi, that their fossil shell belonged to Lea's genus *Hippagus*. However, I have elsewhere shown, and it is quite clear, that the last-named genus is the same as *Crenella*, and referable to another division of the Conchifera. Whether the author of the name *Verticordia* had a right to repudiate it and erroneously substitute another for it may be questionable. *Verticordia* had been long previously established by de Candolle for a genus of Myrtaeæ, and is now commonly used by botanists. *Pecchiolia* was proposed in 1851 by Meneghini for a well-known Miocene shell, the *Chama argentea* of Mariti, 1797 = *C. arietina*, Brocchi, 1814. In *Pecchiolia* the beak is incurved as in *Isocardia*, leaving a more or less deep lunule, which is impressed on the hinge, and gives the appearance of a tooth-like projection in some species. But I am by no means satisfied that *Pecchiolia* is distinguishable from *Lyonsia* by any sufficient character.

2. PECCHIOIA SUBQUADRATA<sup>1</sup>, Jeffreys. (Plate LXX. fig. 3.)

SHELL forming a short oblong, or squarish, very convex, thin, semitransparent, and glossy; *sculpture*, numerous but irregular microscopic tubercles, which penetrate the outer layer of the shell; these are larger in front and on each side: *colour* pale yellowish-white: *margins* short and rounded on the anterior side, broad and gently curved in front, rounded but somewhat truncated on the posterior side, nearly straight at the back: *beaks* small, blunt, and slightly incurved; umbones prominent: *lunule* short and deep: *hinge-line* obtuse-angled: *hinge-plate* rather thick, considering the texture of the shell: *cartilage* long, pale yellowish: *teeth* none: *inside* polished: *scars* inconspicuous. L. 0·1, B. 0·15.

'Porcupine' Exp. 1869: St. 47. 1870: Atl. 16, 17.

Differs from the young of *P. abyssicola* in shape and sculpture.

3. PECCHIOIA INSCULPTA<sup>2</sup>, Jeffreys. (Plate LXX. fig. 4.)

SHELL globular, with a square outline, equivalve, very thin, pearly, semitransparent, and glossy: *sculpture*, about 25 delicate riblets or striæ, which radiate from the beak in each valve, besides microscopic and numerous concentric striæ in the interstices of the riblets, and irregular lines of growth; the anterior end is smooth: *colour* white: *epidermis* membranous, sometimes partially incrustated with mud: *margins* bluntly angular on the anterior side, nearly straight in front, obliquely sloping or truncated on the posterior side, nearly straight at the back: *beaks* sunken, small, incurved; umbones prominent: *lunule* heart-shaped: *ossicle* white, solid, obliquely twisted, unequally forked on the broader end towards the posterior side: *hinge-plate* short, thickened: *inside* glossy: *scars* slight. L. 0·25, B. 0·25.

'Porcupine' Exp. 1869: St. 1, 10, 22. 1870: Med. Off Jijeli (a larger valve).

*Distribution*. Bay of Biscay ('Travailleur' Exp.); 552-645 fms. Palermo (*Monterosato*); 162 fms.

*Fossil*. Pliocene: Messina (*Seguenza*, as *Verticordia ecostata*, and afterwards *V. insculpta*).

4. PECCHIOIA SINUOSA<sup>3</sup>, Jeffreys. (Plate LXX. fig. 5.)

SHELL of an irregular shape, but somewhat triangular and sinuous, convex, thin, opaque and lustreless: *sculpture*, close-set microscopic tubercles arranged in longitudinal rows; they are easily rubbed off, and then the surface becomes quite smooth and glossy: *colour* white: *epidermis* filmy: *margins* imperfect, but rounded on the anterior side, apparently sloping obliquely in front, nearly straight at the back: *beaks* very small, incurved: *lunule* excavated, enclosed by a slight ridge: *hinge-plate* narrow, twisted, and presenting the appearance of having a short notch or fold under the beak: *inside* nacreous: *scars* indistinct. L. 0·3, B. 0·35.

'Porcupine' Exp. 1870: Atl. St. 16 (fragments only).

<sup>1</sup> Squarish.

<sup>2</sup> Engraved.

<sup>3</sup> Full of folds, sinuous.

Allied to *Verticordia axinoides* of Seguenza, a Sicilian Pliocene fossil, but very much smaller and not so deeply sinuated on the posterior side.

✓ 5. *PECCHIOLIA ANGULATA*<sup>1</sup>, Jeffreys. (Plate LXX. fig. 6.)

SHELL lengthwise oblong or shaped like a *Mytilus*, angular and crooked, gibbous in the middle, rather solid, opaque, and lustreless: *sculpture*, numerous minute tubercles or short prickles arranged lengthwise in rows: *colour* yellowish-white: *epidermis* apparently wanting; *margins* rounded on the anterior side, sloping in front, nearly straight on the posterior side, triangular at the back; *beak* blunt, twisted inwards: *lunule* small: *cartilage-pit* narrow: *hinge-plate* rather broad, folded outwards: *inside* nacreous: *scars* inconspicuous. L. 0.35, B. 0.2.

'Porcupine' Exp. 1870: Atl. St. 24 (a single and imperfect valve).

*Distribution*. Off the Josephine Bank ('Josephine' Exp.); 340-430 fms. A small single valve.

✓ 6. *PECCHIOLIA GRANULATA*, Seguenza.

*Verticordia granulata*, Seg. in Journ. Conch. viii. (1860), p. 293, pl. x. f. 2, f-h.

*V. trapezoidea*, Seg. Acc. Sc. fis. e mat. 1876, p. 7.

'Porcupine' Exp. 1870: Atl. St. 2, 3, 6, 8, 9, 27-29; Med. 55, Adventure Bank, off Rinaldo's Chair.

*Distribution*. Off Tripoli coast in 'Shearwater' Exp., Palermo, Hydra Channel G. Egina, G. Mexico off Boca Grande, Gotto Is., Japan; 66-162 fms.

*Fossil*. Miocene: Calabria, Madeira. Pliocene: Calabria, Sicily.

*Verticordia multicostata*, A. Adams, 1862. I regard *V. trapezoidea* of Seguenza as the young of the present species. Both occurred in the 'Porcupine' Expedition. The size of my largest specimen is  $3\frac{1}{2}$  tenths long and the same in breadth. The right valve has a tooth-like callosity under the lunule, and a laminar lateral tooth on the posterior side.

✓ 7. *PECCHIOLIA ACUTICOSTATA*, Philippi.

*Hippagus acuticostatus*, Phil. Moll. Sic. ii. p. 42, t. xiv. f. 19, a, b, c.

'Porcupine' Exp. 1870: Atl. St. 24-28a; Med. 55 (fragment).

*Distribution*. G. Mexico off Rebecca I., off Barbadoes ('Blake' Exp.), Azores ('Josephine' Exp.), Japan; 71-600 fms.

*Fossil*. Pliocene: Coralline Crag, Calabria and Sicily.

*Hippagus verticordius*, S. V. Wood, MS.; *H. cardiiformis*, J. Sowerby; *Verticordia deshayesiana*, Fischer; *V. japonica*, A. Adams. My largest specimen is  $5\frac{1}{2}$  by  $4\frac{1}{2}$  tenths. The tooth-like protuberance is very prominent. Coralline Crag specimens are smaller and flatter; the tubercles (or "spinulæ," as Mr. Wood called them) are

<sup>1</sup> Angular.

distinctly observable in these as well as in recent specimens. Mr. Dall says that the number of ribs varies from 14 to 17.

✓ PHOLADOMYA LOVENI<sup>1</sup>, Jeffreys. (Plate LXX. fig. 7.)

SHELL inequilateral, wedge-shaped, gaping at the posterior end, convex, of a pearly nature, thin, partly semitransparent, lustreless: *sculpture*, 10–12 longitudinal ribs, besides some intermediate striæ; these are more or less interrupted by strong periodical marks of growth, so as to give the ribs a nodulous appearance; the sides are ribless; the whole surface is covered with minute prickly tubercles: *colour* white: *margins* rounded on the anterior side, inclining upwards towards the other side, which is also rounded but slightly truncate, sloping at the back from each side of the umbo: *beaks* bluntly triangular, turned inwards; umbones prominent: *ligamental pit* in the right valve obtuse-angled, placed outside underneath the beak, and defined outwards by a thin plate: *hinge-line* sloping towards the posterior side: *hinge-plate* thin, sinuous, reflected: *teeth* none: *inside* highly glossy and nacreous: *scars* inconspicuous. L. 0·4, B. 0·5.

‘Porcupine’ Exp. 1870: Atl. St. 22, 28a; Med. 55. None of the specimens are quite perfect. One of them indicates twice the size given in the description. That figured is from the ‘Josephine’ Expedition.

*Distribution.* Palermo, fragments (*Monterosato*); 162 fms.: off Marseilles (‘Travailleur’ Exp. 1881); Villa franca, Azores (‘Josephine’ Exp.); 320–600 fms.

Monterosato doubtfully refers this species to the *Thracia pholadomyoides* of Forbes from the Ægean; but Forbes knew too well the hinge-structure of *Thracia* as well as of *Pholadomya* to have made such a mistake in the genus. His description is as follows (1844):—

“Fam. Pyloridæ. Genus *Thracia*, Leach.”

“*Thracia pholadomyoides*, sp. nov.

“*T. testâ ventricosâ, sinuosâ, granulatâ, concentricè sulcatâ, sulcis longitudinalibus paucis (6) decussatâ; umbonibus acutis.*  
Long.  $0\frac{9}{12}$ , lat.  $1\frac{9}{2}$  unc. Cape Artemisium (1808).”

I cannot guess the meaning of the last figures. Forbes gives also two other species of *Thracia*, viz. *phaseolina* and *pubescens*. I should have been inclined to consider his *T. pholadomyoides* a young *T. corbuloidea* but for that part of his description which mentions the decussation of concentric furrows by six longitudinal furrows. *P. zanclea* of Seguenza, from the Sicilian pliocene formation, is allied to the present species; but it is more rounded, and is not produced or extended at the anterior side. If our species be that of Forbes, the name *pholadomyoides* would be inappropriate.

<sup>1</sup> Named in honour of Professor Lovén, the eminent Swedish zoologist.



## Family XIX. ANATINIDÆ.

✓ 1. *THRACIA PRÆTENUIS*, Pulteney.*Mya prætenuis*, Pult. Cat. Dors. p. 28, pl. iv. f. 7.*T. prætenuis*, B. C. iii. p. 34; v. p. 190, pl. xlvi. f. 3.

'Porcupine' Exp. 1869: St. 10 (young), Galway B., 17 (young).

*Distribution*. Iceland and Loffoden Is. to Algiers and Sicily; 0-50 fms.*Fossil*. Pliocene: Coralline Crag, Italy, Rhodes. Post-tertiary: Norway, England, Calabria; 0-130 ft.✓ 2. *THRACIA PAPYRACEA*, Poli.*Tellina papyracea*, Poli, Test. Sic. i. p. 43, t. xv. f. 14, 18.*Thracia papyracea*, B. C. iii. p. 36, pl. ii. f. 2; v. p. 191, pl. xlvi. f. 4, 4a.

'Porcupine' Exp. 1869: St. 10, 25, 33, 36 (fragment), 68. 1870: Atl. 10, Vigo B., 26-28a; Med. Cartagena B., 55 (fragment).

*Distribution*. Iceland and Loffoden Is. to the Ægean, Adriatic, Morocco, Madeira, Canaries, ? G. Mexico ('Blake' Exp.); 0-640? fms.*Fossil*. Miocene: Vienna Basin. Pliocene: Coralline Crag, Italy. Post-tertiary: Norway, Sweden, Great Britain and Ireland, Calabria; 0-130 ft.3. *THRACIA PUBESCENS*, Pulteney.*Mya pubescens*, Pult. Cat. Dors. p. 27, pl. iv. f. 6.*T. pubescens*, B. C. iii. p. 38; v. p. 191, pl. xlvi. f. 5.

'Porcupine' Exp. 1870: Atl. St. Setubal B., C. Sagres (fragmentary), 36 (valve); Med. Capo de Gata (fragment).

*Distribution*. S. England to G. Egina, Adriatic, Morocco, Canaries; 1-130 fms.*Fossil*. Pliocene: Coralline Crag, Italy. Post-tertiary: Yorkshire, Scotland, and Ireland, Calabria.4. *THRACIA CONVEXA*, W. Wood.*Mya convexa*, W. Wood, Gen. Conch. i. p. 92, pl. 18. f. 1.*T. convexa*, B. C. iii. p. 39; v. p. 191, pl. xlvi. f. 6.

'Porcupine' Exp. 1869: St. Loch Torridon. 1870: Atl. 10, 16, C. Sagres, 27-28a; Med. off Rasel Amoush. All the specimens are fragmentary.

*Distribution*. Bergen to Sicily and the Adriatic, Sitka (*Dall*, as *T. curta* of Conrad); 4-628 fms.*Fossil*. Miocene: Vienna Basin and Switzerland. Pliocene: Coralline Crag, Italy. Post-tertiary: Norway, Scotland and Ireland, Calabria; 0-500 ft.Besides the synonyms given in 'British Conchology,' I may mention *T. trigona* of Aradas and *T. hiatelloides* of Brusina.



## ✓ 5. THRACIA CORBULOÏDEA, de Blainville.

*T. corbuloidea*, de Blainv. Dict. Sc. Nat. xvi. p. 514; Atlas, pl. 76. f. 7.

‘Porcupine’ Exp. 1870: Med. St. Cartagena B. (fragment).

*Distribution*. S.W. France, Mediterranean and Adriatic.

*Fossil*. Pliocene: Red? and Coralline Crag, Italy. Post-tertiary: Calabria.

*Syn.* *T. inflata*, J. Sowerby, *T. subtilissima* of Renier according to Nardo, *T. maravignæ*, Aradas and Calcara according to Aradas and Tiberi. The young is *T. meneghiniana* of Aradas. The specific name is erroneously spelt *corbuloides* by modern authors.

## Family XX. CORBULIDÆ.

## ✓ 1. POROMYA GRANULATA, Nyst &amp; Westendorff.

*Corbula granulata*, Nyst & West. Coq. Foss. d’Anvers, p. 6, pl. iii. f. 3.

*P. granulata*, B. C. iii. p. 45, pl. ii. f. 3; v. p. 191, pl. xlix. f. 1.

‘Lightning’ Exp. St. 2.

‘Porcupine’ Exp. 1869: St. 1, 23a. 1870: Atl. 10, 24, C. Sagres, 24, 26-30, 36; Med. Cartagena B., 50, Benzert Road, Adventure Bank, off Rinaldo’s Chair.

*Distribution*. Loffoden Is. to the Ægean and Adriatic, Madeira, G. Mexico, off Barbadoes and Sombreros (‘Blake’ Exp.), New England and Maine; 15-300 fms.

*Fossil*. Pliocene: Coralline Crag, Antwerp Crag, S. France, Calabria and Sicily. Not *P. granulata* of Philippi from the Miocene formation of N.W. Germany.

## ✓ 2. POROMYA NÆROÏDES, Seguenza. (Plate LXX. fig. 8.)

*P. næroides*, Seg. Boll. d. R. Com. geol. 1877, p. 270.

‘Porcupine’ Exp. 1870: Atl. St. 23a, 24, 28a. Valves.

*Distribution*. G. Mexico; 114 fms.

*Fossil*. Pliocene: Calabria and Sicily.

*P. tuberata*, Jeffreys MS. The present species differs from *P. granulata* in having greater breadth in proportion to the length, in not being strongly angulated on the posterior side, and especially in the sculpture, which consists of close-set longitudinal lines of minute prickly tubercles instead of irregularly disposed granules.

## A. Smooth. Typical.

✓ 1. NÆERA TRUNCATA<sup>1</sup>, Jeffreys. (Plate LXX. fig. 9.)

SHELL squarish, very convex, moderately solid, opaque, glossy: *sculpture*, smooth, with the exception of irregular but rather numerous lines of growth; rostrum short but broad, separated or defined by a gradual indentation; it has two slight ridges or keels extending outwards from the beak at an acute angle: *colour* whitish: *margins*

Lopped off.

rounded on each side, gently curved in front, straight at the back: *beak* small and pointed, recurved towards the anterior side; umbones very prominent; *cartilage-pit* oval, minute, placed obliquely under the beak: *hinge-line* straight: *hinge-plate* narrow: *teeth* consisting of only a slight lateral on the posterior side: *inside* glossy: *scars* indistinct. L. 0·25, B. 0·3.

'Porcupine' Exp. 1870: Atl. St. 16 (a single valve and a fragment).

*Distribution.* Bay of Biscay ('Travailleur' Exp.), a living and perfect specimen; 733 fms.

✓ 2. *NEÆRA SUBTORTA*, G. O. Sars.

*N. subtorta*, G. O. Sars, Moll. reg. arct. Norv. p. 87, t. 6. f. 6, *a-c*.

'Lightning' Exp. St. 1, 3.

'Porcupine' Exp. 1869: St. 62.

*Distribution.* Spitzbergen, Norwegian arctic Expedition, Finmark, Kara Sea; 30-123 fms.

*Fossil.* British North-Polar Expedition, lat. 82° 33'; 40 ft.

✓ 3. *NEÆRA SULCIFERA*<sup>1</sup>, Jeffreys. (Plate LXX. fig. 10.)

SHELL obliquely oval, convex, thin, semitransparent, rather glossy: *sculpture*, irregular lines of growth, which become curved striae on the upper part of the anterior side; rostrum short and broadish, separated from the rest of the shell by a furrow, as if pinched up: it has a single ridge or keel in the middle, extending from the beak to the posterior end: *colour* white: *epidermis* fibrous: *margins* rounded on the anterior side and in front, terminating on the posterior or rostral end in a blunt curve, and sloping at the back on each side of the unbo: *beaks* blunt, slightly incurved; umbones prominent: *cartilage-pit* forming a small narrow and oblique slit: *teeth* as in *N. truncata*: *inside* glossy, exhibiting there the underside of the furrow as a ridge: *scars* indistinct. L. 0·25, B. 0·35.

'Porcupine' Exp. 1869: St. 40. 1870: Atl. 9, 13, C. Sagres, 27, 28.

*Distribution.* Bay of Biscay ('Travailleur' Exp.); 552-628 fms.

This species differs from *N. subtorta* in being somewhat broader and not twisted, and in having a blunter rostrum, which is marked by a ridge in the middle and separated by a furrow from the rest of the shell. The last characters serve to separate it also from *N. obesa*.

✓ 4. *NEÆRA OBESA*, Lovén.

*N. obesa*, Lov. Ind. Moll. Scand. p. 48; G. O. Sars, Moll. reg. arct. Norv. p. 86, t. 6. f. 4, *a-c*.

'Porcupine' Exp. 1869: St. 37 (young, living). 1870: Atl. 1, 3.

*Distribution.* Spitzbergen, Norway, Skager Rack and Cattegat, Azores, N.E. America, Catania?; 20-1000 fms.

*Fossil.* Pliocene: Calabria?

<sup>1</sup> Marked with a furrow.

*Syn.* *N. pellucida* of Stimpson, *N. ardiniana* of Biondi?, according to Monterosato; var. *N. glacialis* of G. O. Sars. Not *N. obesa* of S. V. Wood.

✓ 5. *NEÆRA CUSPIDATA*, Olivi.

*Tellina cuspidata*, Olivi, Zool. Adr. p. 101, t. iv. f. 3.

*N. cuspidata*, B. C. iii. p. 53, pl. ii. f. 4; v. p. 191, pl. xlix. f. 5.

'Porcupine' Exp. 1869: St. 1, 6, 9, 13, 23a, 25 (var. *curta*), 55, 61, 68, 69, Little Minch, off Lerwick. 1870: Atl. 10 (var. *curta*), 13 (var. *curta*), C. Sagres, 36 (and var. *curta*); Med. Capo de Gata, 55 (fragment), G. Bona, Benzert Road, Rasel Amoush, Adventure Bank, off Rinaldo's Chair (and var. *acutalis*, smaller, running to a point).

*Distribution.* S. Greenland, Spitzbergen, and Finmark to the Ægean and Adriatic, Madeira, Canaries, China Sea?; 12-733 fms.

*Fossil.* Miocene: Vienna Basin, Baden, S. France. Pliocene: Coralline Crag?, Belgium, Italy. Post-tertiary: Norway, Calabria; 0-50 ft.

✓ 6. *NEÆRA GRACILIS*<sup>1</sup>, Jeffreys. (Plate LXX. fig. 11.)

SHELL forming a rather long oval, convex, not very thin, opaque, lustreless: *sculpture*, slight and irregular but numerous striæ in the line of growth, which become wrinkled towards the rostrum: *colour* whitish: *epidermis* slight, caducous: *margins* rounded on the anterior side, gently curved in front; posterior side or rostrum broad, abruptly terminating, somewhat keeled or angular, and having the striæ in this part arranged lengthwise or at a right angle to the concentric striæ; dorsal margin incurved; *beaks* mamillar, slightly inflected towards the anterior side; umbones small, but prominent, and projecting behind: *cartilage-pit* small, oblique, and sunken: *hinge-line* raised on the anterior and incurved on the posterior side: *hinge-plate* folded back on the anterior and thickened on the other side: *teeth*, a triangular and nearly upright lateral, continuous with the cartilage-pit on the posterior side of the right valve: *inside* glossy: *scars* irregularly triangular. L. 0·4, B. 0·6.

'Porcupine' Exp. 1870: Atl. St. 16. A perfect but dead specimen.

Differs from *N. rostrata* in being more compressed, and in having a short, broad, and keeled rostrum, which is not, as in that species, abruptly pinched up and elongated. I should have preferred the specific name *elegans* for the shell which I have now described; but it has been used by Mr. Hinds for a species from the 'Sulphur' Expedition.

✓ 7. *NEÆRA ROSTRATA*, Spengler.

*Mya rostrata*, Spengl. in Skrivt. Selsk. iii. p. 42, t. ii. f. 16.

*N. rostrata*, B. C. iii. p. 51; v. p. 191, pl. xlix. f. 3.

'Porcupine' Exp. 1869: St. 1, 6, 10, 13, 14, 18, 25, 61. 1870:

<sup>1</sup> Slender.

Atl. 6, 9, 13, 17, 24, 25, C. Sagres, 27-28a, 36; Med. Capo de Gata, Cartagena B., 55, Adventure Bank, off Rinaldo's Chair.

*Distribution.* Loffoden Is. to Shetland and the North Sea, Bay of Biscay, Mediterranean and Adriatic, New England, G. Mexico, off Barbadoes ('Blake' Exp.), off Patagonia; 10-645 fms.

*Fossil.* Miocene: N.W. Germany. Pliocene: Monte Mario and Sicily.

Closely allied to *N. chinensis* of Gray. According to Aradas and Benoit the present species is *N. ardiniana* of Biondi. The animal is pale yellowish-white: *mantle* having its edges pouting and folded back: *tube* cylindrical, extensile, and white, fringed with a few short cirri, which are bulbous at their extremities: *foot* tongue-shaped, white.

✓ 8. *NEÆRA BICARINATA*<sup>1</sup>, Jeffreys. (Plate LXXI. fig. 1.)

*N. bicarinata*, Jeffr. in Ann. & Mag. N. H. Dec. 1876, p. 496.

SHELL slightly inequivalve, pear-shaped, somewhat compressed, thin, semitransparent, and glossy: *sculpture*, irregular concentric striæ, which in a fragment of a larger specimen become wrinkles; the rostrum has two slight ridges or keels running outwards from the beak, the upper being nearly parallel with the hinge-line, and the lower forming with it an acute angle: *colour* whitish: *margins* rounded on the anterior side, having a less degree of curvature in front; the rostrum or posterior side is defined by a shallow indentation; it is broad and angular, with a blunt point; dorsal margin straight: *beaks* calyciform, incurved towards the anterior side; umbones slightly prominent: *cartilage-pit* small, obliquely oval: *hinge-line* straight: *hinge-plate* thin, except under the beak: *teeth*, a short and nearly erect lateral on the posterior side of the right valve: *inside* glossy: *muscular scar* on the posterior side triangular and distinct. L. 0.3, B. 0.45.

'Porcupine' Exp. 1870: Atl. St. 16, 17 (valves).

*Distribution.* North Atlantic ('Valorous' Exp.; a fragment), Bay of Biscay ('Travailleur' Exp.); 690-733 fms.

✓ 9. *NEÆRA TERES*<sup>2</sup>, Jeffreys. (Plate LXXI. fig. 2.)

SHELL triangular, convex, thin, semitransparent and glossy: *sculpture*, smooth, with the exception of some wrinkly striæ across the rostrum and a ridge or keel extending diagonally from the beak to the lower extremity of the rostrum; occasionally there is a second but fainter ridge, as in the last species: *colour* whitish: *epidermis* thin, light yellowish-brown: *margins* rounded on the anterior side and in front; rostrum short, separated or defined by a slight indentation, and ending in a somewhat truncated point; dorsal margin nearly straight: *beaks* small, calyciform, incurved anteriorly; umbones prominent: *cartilage-pit* small, oblong, and placed obliquely: *hinge-line* raised on the anterior, and somewhat incurved on the posterior side: *teeth*, a short triangular lateral on each side of the

<sup>1</sup> Double-keeled.

<sup>2</sup> Rounded off.



right valve, that on the posterior side extending through the middle of the rostrum: *inside* polished: *scars* strongly marked on the posterior side. L. 0·275, B. 0·35.

'Porcupine' Exp. 1870: Atl. St. 16, 17, 17*a*, 22, 31-34. Several valves and a small living specimen.

*Distribution.* Off Josephine Bank and the Azores ('Josephine' Exp.), G. Mexico; 138-790 fms.

✓ 10. *NEERA DEPRESSA*<sup>1</sup>, Jeffreys. (Plate LXXI. fig. 3.)

SHELL oval, wedge-shaped on the posterior side, depressed or somewhat flattened, thin, semitransparent, rather glossy: *sculpture*, fine and close-set minute concentric striæ in front and on the rostrum, besides occasional lines of growth: *colour* whitish: *epidermis* filmy, apparent only on the front edge and rostrum: *margins* rounded on the anterior side and more gently curved in front; rostrum wedge-shaped, not defined by any indentation, somewhat truncated at the extremity; dorsal margin raised and parallel with the beak on the anterior side, sloping and slightly incurved on the other side: *beaks* blunt, scarcely incurved; umbones small and not very prominent: *cartilage-pit* small, obliquely projecting inwards, and resembling a tooth: *hinge-line* curved on the anterior and sloping on the other side: *hinge-plate* thickened near the beak on each side: *teeth*, a single laminar lateral on the posterior side of the right valve, nearly parallel with the hinge-plate: *inside* glossy: *scar* of the posterior adductor muscle acutangular, defined beneath by a ridge. L. 0·2, B. 0·3.

'Porcupine' Exp. 1870: Atl. St. 16, 17, 17*a*. Numerous valves.

Differs from *N. exigua* in not being globose, having close-set concentric striæ in front and on the posterior side, and in the rostrum being angulated and straight. The lateral tooth also is quite different; and the ridge which defines the posterior adductor muscle in the present species is characteristic.

B. Striated concentrically. AULACOPHORA.

✓ 11. *NEERA LAMELLOSA*, M. Sars.

*N. lamellosa*, M. Sars, Arct. Molluskf. v. Norges nordlige Kyst (1858), p. 62.

*N. jugosa*, G. O. Sars, Moll. reg. arct. Norv. p. 88, t. 6. f. 9, *a-c*.

'Lightning' Exp. St. 2, 3.

'Porcupine' Exp. 1869: St. 23, 23*a*, 25, 61. And var. *koreni*: more or less smooth or wanting the concentric ridges, and having a broader rostrum. 1870: Atl. 3, 9, 12.

*Distribution.* Finmark to Bergen coast, Bay of Biscay, Palermo, New England; 50-552 fms.

*Fossil.* Pliocene; Calabria and Messina.

I am now inclined to consider the recent species distinct from *N. jugosa* of the Coralline Crag. The fossil species is regularly tri-

<sup>1</sup> Depressed.



angular and has no distinct rostrum; but it may have been the ancestor of the recent species.

✓ 12. *NEERA CONTRACTA*<sup>1</sup>, Jeffreys. (Plate LXXI. fig. 4.)

SHELL transversely oblong, convex, thin, opaque, lustreless: *sculpture*, 25–30 riblets or raised striæ in the line of growth, those on the rostrum being at a right angle to the rest: the rostrum is sometimes angulated and keeled: *colour* whitish: *margins* rounded on the anterior side, contracted and gently curved in front, whence there is a gradual slope to the snout-like rostrum; posterior side having a truncated extremity; dorsal margin somewhat incurved: *beaks* small, blunt, intorted and sunken; umbones prominent: *cartilage-pit* narrow, oblique: *hinge-line* slightly curved on the anterior and nearly straight on the posterior side: *hinge-plate* reflected anteriorly, and somewhat thickened posteriorly: *teeth*, a single slight laminar lateral on the posterior side of the right valve, parallel with the hinge-plate, and extending to the upper end of the rostrum: *inside* glossy: *muscular scars* large and distinct. L. 0·2, B. 0·35.

'Porcupine' Exp. 1870: Atl. St. 16, 17, 17a. Several valves.

Easily distinguishable from *N. lamellosa*, not merely by its greater size, but by its narrow or contracted shape and proportionally large rostrum; the lateral tooth also, in *N. lamellosa*, is triangular and short, not laminar and elongated as in the present species. Another species, from the 'Challenger' Expedition, has been named *coarctata* (*coartata*) by Mr. Watson.

13. *NEERA SEMISTRIGOSA*<sup>2</sup>, Jeffreys. (Plate LXXI. fig. 5.)

SHELL oval-oblong, convex, thin, semitransparent, and rather glossy: *sculpture*, 12–15 delicate concentric riblets on the posterior side only; the rostrum is closely wrinkled across; and the rest of the shell is smooth: *colour* clear white: *margins* rounded, somewhat wedge-shaped on the anterior side, gently convex in front, and sloping upwards to the posterior side; rostrum slightly upturned, short and broad, defined by a shallow indentation, with a truncated extremity; dorsal margin interrupted by the umbo, raised on the anterior, and nearly straight on the other side: *beaks* sunken, small, and mamillar; umbones prominent: *cartilage-pit* pear-shaped, lying obliquely under the beak: *hinge-line* corresponding with the dorsal margin: *hinge-plate* thin, reflected on the anterior side: *teeth*, a long laminar lateral on each side of the right valve, that on the posterior side being triangular in the middle: *inside* polished: *muscular scars* triangular and large. L. 0·25, B. 0·4.

'Porcupine' Exp. 1870: Atl. St. 16, 17, 17a.

Allied to *N. notabilis*; but the shape of the present species is more oval or oblong, the concentric ridges are less numerous and are confined to the posterior side, the rostrum is broader and not keeled and is separated by a shallow indentation, and the lateral teeth are much larger.

<sup>1</sup> Contracted.

<sup>2</sup> Half-wrinkled.

✓ 14. *NEÆRA* *CIRCINATA*, Jeffreys. (Plate LXXI. fig. 6.)

*N. circinata*, Jeffr. in Ann. & Mag. N. H. Dec. 1876, p. 497.

'Porcupine' Exp. 1869: St. 23 (a fragment). 1870: Atl. 16 (a small valve).

*Distribution.* Bay of Biscay ('Travailleur' Exp.), N. Atlantic ('Valorous' Exp.), W. of Azores ('Challenger' Exp.); 600-1450 fms.

*N. imbricata*, Jeffr. MS., is a synonym.

✓ 15. *NEÆRA* *RUGINOSA*<sup>1</sup>, Jeffreys. (Plate LXXI. fig. 7.)

SHELL roundish-oval, somewhat depressed, thin, semitransparent, and rather glossy: *sculpture*, numerous fine and concentric minute striæ, which become wrinkly towards and on the posterior side: *colour* white: *margins* rounded equally on the anterior side and in front; rostrum very short and obliquely truncated; dorsal margin lying beneath the umbo, short and scarcely curved on the anterior side, half as long again and straight on the other side: *beaks* minute, circular, and sunken; umbo small and prominent: *cartilage-pit* minute, narrow, and placed obliquely: *hinge-line* nearly straight: *hinge-plate* thin, slightly reflected on the anterior side: *teeth*, none in the left valve, the right valve not having been found: *inside* polished: *scars* inconspicuous. L. 0.1, B. 0.15.

'Porcupine' Exp. 1870: Atl. St. 17, 17a. Three left valves only.

This small species might be mistaken for the young of *N. circinata*; but the sculpture is very different, and the rostrum is much shorter.

✓ 16. *NEÆRA* *INFLATA*<sup>2</sup>, Jeffreys. (Plate LXXI. fig. 8.)

SHELL equivalve, roundish-oval, with an oblique outline, gaping posteriorly, globose, rather solid, semitransparent, and glossy: *sculpture*, very numerous, fine, and close-set concentric striæ, which are observable with the naked eye; they are more irregular and sometimes wanting, or become wrinkly, on the rostrum: *colour* pale yellowish-white: *epidermis* filmy: *margins* rounded on the anterior side and in front; rostrum short and bluntly pointed, appearing as if pinched up, and separated or defined by a shallow indentation; it is occasionally somewhat angulated and marked by a slight keel or ridge, which is more distinct in the young; dorsal margin upraised on the anterior and down-sloping on the posterior side: *beaks* triangular, incurved towards the anterior side; umbones very prominent: *cartilage-pit* oblong, narrow, and obliquely projecting inwards: *hinge-line* obtuse-angled: *hinge-plate* thin, a little reflected anteriorly: *teeth*, a small upright triangular cardinal and a long laminar lateral on each side in the right valve, besides a long laminar lateral on the posterior side, and parallel with the hinge-plate in the left valve: *inside* polished, furnished on the posterior side in each valve with a strong and curved laminar process or ridge, which apparently

<sup>1</sup> Wrinkled.

<sup>2</sup> Swollen.

supports the adductor muscle on that side: *scars* otherwise inconspicuous. L. 0·4, B. 0·65.

'Porcupine' Exp. 1869: St. 39. 1870: Atl. 16, 17*a*.

*Distribution*. Off Gomera, Azores ('Challenger' Exp.); 620 fms.

#### C. Keeled. TROPIDOPHORA.

##### 17. *NEERA ABBREVIATA*, Forbes.

*N. abbreviata*, Forb. in Proc. Zool. Soc. 1843, p. 75: B. C. iii. p. 48; v. p. 191, pl. xlix. f. 2.

'Porcupine' Exp. 1869: St. 10, 13, 18. 1870: Atl. 9, 36; Med. 55, Adventure Bank, off Rinaldo's Chair.

*Distribution*. Finmark to W. Scotland, W. France and Bay of Biscay, N. Spain, Mediterranean from Naples to the Ægean; 4-552 fms.

*Fossil*. Pliocene: Belgium, S. France, Sicily.

*N. vitrea* of Lovén, and *Corbula reflexa* of O. G. Costa according to Aradas and Benoit. The shell frequently wants the concentric plaits or folds.

##### 18. *NEERA ANGULARIS*, Jeffreys. (Plate LXXI. fig. 9.)

*N. angularis*, Jeffr. in Ann. & Mag. N. H. Dec. 1876, p. 498.

'Porcupine' Exp. 1870: Atl. St. 16, 17, 17*a*. A living specimen and a few valves.

*Distribution*. G. Mexico (*Pourtales*), N. Atlantic ('Valorous' Exp.); 290-1785 fms.

A lovely shell.

#### D. Ribbed lengthwise. SPATHOPHORA.

##### 19. *NEERA CURTA*<sup>1</sup>, Jeffreys. (Plate LXXI. fig. 10.)

*N. curta*, Jeffr. in Ann. & Mag. N. H. Dec. 1876, p. 495.

SHELL roundish-oval, with an oblique outline, globose, thin, opaque, and lustreless, but semitransparent and glossy when young: *sculpture*, numerous longitudinal sharp ribs on the posterior side, and striae in the same direction on the other side, as well as usually on the rostrum; the sculpture of the rostrum, however, is irregular, sometimes consisting of a single transverse riblet, and in other specimens of more than a dozen striae, and occasionally the rostrum is quite smooth; there are also close-set and wavy concentric lines of growth, which are crossed by the longitudinal sculpture: *colour* white: *margins* rounded on the anterior side, with an oblique truncature above, gently curved in front; rostrum short, abruptly pinched up and rounded at the point; dorsal margin on a level with the umbo on the anterior side and incurved on the other side: *beaks* minute, inflected, and sunk; umbones prominent: *cartilage-pit* small, triangular, placed immediately below the beaks: *hinge-line* flexuous: *hinge-plate* thin and reflected on the anterior side, thickened on the posterior side: *teeth*, a short strong triangular lateral

<sup>1</sup> Short.

on the posterior side of the right valve, which becomes laminar towards the upper part of the rostrum; it commences below the beak, and is connected on the side with the outer ridge or wall of the cartilage-pit: *inside* glossy; edges notched by the ribs: *muscular scars* triangular, large, and well marked on the posterior side, and strengthened by a short upright plate. L. 0·4, B. 0·55.

'Porcupine' Exp. 1870: Atl St. 16, 17, 24-28a.

*Distribution.* Off Bermuda ('Challenger' Exp.), Azores ('Josephine' Exp.); 200-600 fms.

May be distinguished at all ages from *N. costellata* by its more globular shape and much shorter rostrum, and by the greater continuity of the ribs on the posterior side. See also my remarks in the 'Annals and Magazine of Natural History' for December 1876 in comparison of the present species with *N. striata*.

✓ 20. *NEÆRA COSTELLATA*, Deshayes.

*Corbula costellata*, Desh. Expl. Scient. Mor. (Géol.), p. 86, t. vii. f. 1-3.

*N. costellata*, B. C. iii. p. 49; v. p. 191, pl. xlix. f. 3.

'Porcupine' Exp. 1869: St. 1, 6, 10, 13, 14, 25, 35, 61. 1870: Atl. 1, 2, 3, 3a, 9, 10, 13, Setubal B., C. Sagres, 26-29; Med. Cartagena B., 55, Rasel Amoush, Adventure Bank.

*Distribution.* Bergen to G. Egina, Adriatic, Madeira, Canaries, Jamaica?, G. Mexico? ('Blake' Exp.), New England; 10-250 fms.

*Fossil.* Miocene: W. Indies? Pliocene: Belgium, N. France, Italy, Morea.

*Anatina radiata* and *A. ruggeri* of Maravigna, according to Aradas and Benoit, besides other synonyms given in 'British Conchology.'

✓ 21. *NEÆRA STRIATA*, Jeffreys. (Plate LXXI. fig. 11.)

*N. striata*, Jeffr. in Ann. & Mag. N. H. Dec. 1876, p. 495.

'Lightning' Exp.: St. 4, 6 (living).

'Porcupine' Exp. 1869: St. 23 (living), 23a (fragment).

*Distribution.* N. Atlantic ('Valorous' Exp.), between Norway and Novaya Sembla ('Vöringen' Exp.), between the Butt of Lewis and the Faroe Isles ('Knight Errant' cruise), Bay of Biscay ('Travailleur' Exp.), New England?; 85-1450 fms.

Probably *N. multicostata* of Verrill and Smith; but I have not yet been favoured with the promised opportunity of comparing specimens.

✓ 1. *CORBULA GIBBA*, Olivi.

*Tellina gibba*, Olivi, Zool. Adr. p. 101.

*C. gibba*, B. C. iii. p. 56, pl. ii. f. 5; v. p. 192, pl. xlix. f. 6.

'Porcupine' Exp. 1869: St. 1, 2 (and var. *rosea*), 6, 9, 16, 18 (fry), Donegal B. (var.), 19 (fry), 21 (fry), 23a, 25. The Minch, Loch Torridon, off Lerwick. 1870: Atl. 10, Vigo B., 13, Setubal B., C. Sagres, 26, Tangier B.; Med. Cartagena B., 50, 55 (fry), G. Bona, Benzert Road, Rasel Amoush, Tunis B., Adventure Bank.



*Distribution.* Hammerfest to the Ægean; coast of Syria and Sea of Marmora, Adriatic, Mogador, Canaries; 0-130 fms.

*Fossil.* Miocene: Vienna Basin and the greater part of the European continent, Calabria, "America" (*Lyell*)? Pliocene: Coral-line and Red Crag, Belgium, S.W. and S. France, Lisbon, Italy, Algeria, Greece, Kos, Crete, Rhodes, and Cyprus. Post-tertiary: Norway, Sweden, British Isles, Calabria; 0-1360 ft. Not *C. gibba* of Philippi, from N.W. Germany, nor *C. striata* of Lamarck, which is an Eocene fossil from Grignon. Mr. Searles Wood adopted as a specific name *striata* of Walker and Boys; but that was a sentence, and not a name in accordance with the binomial method. There are many other obsolete synonyms.

✓ 2. *CORBULA MEDITERRANEA*, Costa.

*C. mediterranea*, O. G. Costa, Descr. Test. Sic. 1828, p. 182; Cat. Sist. 1829, p. xxvi, t. 1. f. 6: B. C. iii. p. 58; v. p. 192, pl. c. f. 8.

'Porcupine' Exp. 1870: Atl. 26, Tangier B.; Med. Algeiras B.

*Distribution.* Cork and Guernsey (valves only), Mediterranean and Adriatic; 20-120 fms.

*Fossil.* Pliocene: Sicily. Post-tertiary: Isle of Bute, Calabria.

Syn. *Tellina parthenopæa* of D. Chiaje (Philippi), and *C. phytoides* of Deshayes. *C. ovata* of Forbes, which is closely allied to the present species, is the same species as *C. amurensis* of Schrenck, and perhaps *C. laevis* of Hinds. The late Dr. Mörch informed me that Prof. Kröyer had found two specimens of the last-mentioned species at Christiansund, and that specimens (kindly sent me by Mörch) were from the collection of Fabricius, who might have taken them either in Greenland or Norway. Fabricius was a clergyman, and had the charge of a parish in Norway after he had been a missionary in Greenland. Forbes's specimen may have come from one of the glacial deposits in the Isle of Man, which have been described by the Rev. J. Clifton Ward in the 'Geological Magazine' for January 1880.

Family XXI. MYIDÆ.

✓ 1. *MYA TRUNCATA*, Linné.

*M. truncata*, L. S. N. p. 1112: B. C. iii. p. 66, pl. iii. f. 1; v. p. 192, pl. l. f. 2.

'Porcupine' Exp. 1869: St. Donegal B., 70 (var. *uddevallensis*, a semifossil valve).

*Distribution.* Circumpolar in the northern hemisphere, ranging southwards in the N. Atlantic to S.W. France on the east and to Cape Cod on the west, and in the N. Pacific to N. Japan on the east and Vancouver I. on the west, Tuscany?, Adriatic?, Black Sea?; 0-1333 fms. Living down to 80 fms.; at the greatest depths valves only from the walrus or cod.

*Fossil.* Pliocene: English Crag. Post-tertiary: from Spitzbergen and Siberia to Sicily on the east, and from N. lat. 82° 35' to Canada on the west; 0-1360 ft.



Synonyms numerous. The shell referred to by Gmelin for his *Mya membranacea* from the figure in Olafsen and Povelsen's 'Voyage to Iceland' (t. xi. f. 10) is apparently the young of *Mya truncata*. That which Müller described and Gmelin named also *Mya membranacea* was probably *Lyonsia norvegica*.

2. *MYA BINGHAMI*, Turton.

*Sphenia binghami*, Turt. Dith. p. 36, t. 3. f. 4, 5, and t. 19. f. 3.

*M. binghami*, B. C. iii. p. 70; v. p. 192, pl. l. f. 3.

'Porcupine' Exp. 1870: Atl. St. Tangier B.

*Distribution*. Loffoden Is. to Bay of Naples and Tunis; 4½–40 fms.

*Fossil*. Miocene: Lapugy in Transylvania. Pliocene: Coral-line and Red Crag. Post-tertiary: Larne, co. Antrim.

The genus *Sphenia* of Turton is a mere synonym of *Mya*. All the characters given by him to distinguish it from *Mya* are the same in both. His *S. swainsoni* is the young of *M. truncata*.

Family XXII. SAXICAVIDÆ.

1. *PANOPEA PLICATA*, Montagu.

*Mytilus plicatus*, Mont. Test. Brit. Suppl. p. 70.

*P. plicata*, B. C. iii. p. 75, pl. iii. f. 2; v. p. 192, pl. li. f. 1.

'Porcupine' Exp. 1869: St. 9, 18, Donegal B. 1870: Atl. Vigo B., 24; Med. Adventure Bank.

*Distribution*. Loffoden Is. to Algiers and Sicily, Canaries, Korea; 5–628 fms.

*Fossil*. Miocene: Cassel. Pliocene: Coralline and Red Crag, Belgium, Italy. Post-tertiary: Belfast.

There are several generic and specific synonyms.

*SAXICAVA RUGOSA*, Linné.

*Mytilus rugosus*, L. S. N. p. 1156.

*S. rugosa*, B. C. iii. p. 81, pl. iii. f. 3; v. p. 192, pl. li. f. 3, 4.

'Lightning' Exp.: St. 1, 2, 4, 5.

'Porcupine' Exp. 1869: St. 1, 2, 6, 9, 10, 14, 17, 23a, 35, 62, 65 (and semifossil valve of arctic or glacial type). 1870: Atl. 3, 3a, 9, 10, 12, Vigo B., 13, Setubal B., 26–28, 36; Med. G. Bona, Rasel Amoush, G. Tunis, Adventure Bank.

*Distribution*. Type and variety *arctica*, apparently everywhere in every sea throughout the world, at every depth from low water to 1622 fms.

*Fossil*. Miocene, Pliocene, and Post-tertiary: nearly every part of Europe, northern Asia, and North America; 0–1360 ft.

This ubiquitous and variable shell has received more than twenty names in respect of its genus and species. Linné placed the type and some of the varieties in *Mytilus*, *Solen*, and *Mya*. The date of publication is the same for *Mytilus rugosus* and *Mya arctica*; but the former specific name is more generally used. I have therefore treated the latter name as varietal.

## Family XXIII. PHOLADIDÆ.

## ✓ PHOLAS CANDIDA, Linné.

*P. candidus*, L. S. N. p. 1111.*P. candida*, B. C. iii. p. 107; v. p. 193, pl. lii. f. 2.

'Porcupine' Exp. 1870: Med. St. 50 (fragment).

*Distribution*. Coasts of Scotland to Sicily, Adriatic, Black Sea, Mogador; low water<sup>1</sup>.*Fossil*. Pliocene: S. Miniato, Tuscany. Post-tertiary: Norway, England, and Belfast; 0-600 ft.

## XYLOPHAGA DORSALIS, Turton.

*Teredo dorsalis*, Turt. Conch. Dict. p. 185.*X. dorsalis*, B. C. iii. p. 120, pl. iv. f. 3; v. p. 193, pl. liii. f. 4.

'Porcupine' Exp. 1869: St. 5 (valves). 1870: Cartagena B. (in floating wood), Adventure Bank (valves).

*Distribution*. Loffoden Is. to Sicily, Adriatic, G. St. Lawrence to Cape Cod; 0-650 fms.*Fossil*. Miocene: Vienna Basin, Calabria. Pliocene and Post-tertiary: Calabria.

## SUMMARY OF THE FOREGOING LIST.

Families.	Genera.	No. of species.
XVI. MACTRIDÆ .....	AMPHIDESMA .....	2
	MACTRA .....	3
	LUTRARIA .....	3
	SCROBICULARIA .....	6
	SOLECURTUS .....	2
XVII. SOLENIDÆ .....	CERATISOLEN .....	1
	SOLEN .....	3
	PANDORA .....	1
XVIII. PANDORIDÆ .....	LYONSIA .....	3
	PECCHIOIA .....	7
	PHOLADOMYA .....	1
	THRACIA .....	5
XIX. ANATINIDÆ .....	POROMYA .....	2
XX. CORBULIDÆ .....	NEERA .....	21
	CORBULA .....	2
	MYA .....	2
XXI. MYIDÆ .....	PANOPEA .....	1
XXII. SAXICAVIDÆ .....	SAXICAVA .....	1
	PHOLAS .....	1
XXIII. PHOLADIDÆ .....	XYLOPHAGA .....	1
	Total .....	68

<sup>1</sup> Professor Lovén gave Norway as a habitat on Spengler's authority; but *P. papyraceus* of Solander, referred to by Spengler in the 'Skrivter af Naturhistorie-Selskabet' (ii. i. 92), is there stated to be "medio sulco notata," which character belongs to *P. crispata*, and not to *P. candida*; and the habitat given by Spengler was Schleswig or South Jutland in the North Sea. Spengler's figure, however, represents *P. candida*.

In concluding the lists of the Brachiopoda and Conchifera procured during the Expeditions of H.M.S. 'Lightning' and 'Porcupine' from 1868 to 1870, I may explain that the delay of publication, although considerable, was unavoidable; but it has not been without some compensation. Since that period several important and extensive deep-sea explorations have been made from Germany, Norway, Holland, France, Italy, the United States, Canada, and Great Britain, the results of which have greatly tended to increase and improve our knowledge of the geographical and hydrographical distribution of the Mollusca in the North Atlantic. Moreover the careful investigation of the Tertiary and Post-tertiary shells by Professor Seguenza and a host of other able palæontologists has enabled us to ascertain more exactly the range of their geological position. I should be inclined to regard as last in the order of scientific value the discovery of what are called "new species." We know very little—too little—of the abyssal fauna; but it is evident that every exploration of the oceanic bed must produce an endless number of hitherto unpublished forms, to say nothing of those forms which some naturalists, anxious for that kind of fame, continually contrive to manufacture out of the varieties of recorded species.

SUPPLEMENT TO PARTS I., II., III.

Part I., P. Z. S. 1878:—

- Page 398. With respect to the so-called genus *Waldheimia*, my friend Mr. Davidson, in his Report on the Brachiopoda from the 'Challenger' Expedition, says that "there exists in the dorsal valve of *Waldheimia* a median septum, which is not present in *Terebratula*." But some of those species of *Terebratula* which he there places in *Waldheimia* (e. g. *T. cranium* and *T. tenera*) have no such septum. *Rhynchonella psittacea* has no septum, while *R. sicula* has one. That character, therefore, will not serve for generic distinction.
- P. 399. *Argiope cistellula*. Fossil. Calabria.  
 „ *Platydia anomioïdes*. Fossil. Calabria.
- P. 400. *Rhynchonella sicula*. Fossil. Calabria.  
 „ *Crania anomala*. Fossil. Monte Mario and Calabria.
- P. 401. *Terebratula caput-serpentis*. The range of depth for other localities, besides those given for the 'Lightning' and 'Porcupine' Expeditions, should be 400 fms. The variety *mediterranea* is *T. emarginata* of Risso.
- P. 402. *Terebratula tubercata*. North of Spain ('Travailleur' Exp., 1881).  
 „ *Terebratula subquadrata*. Bay of Biscay ('Travailleur' Exp.), very young specimens; 645 fms.
- P. 404. *Terebratula vitrea*, var. *sphenoides*. N. Spain ('Travailleur' Exp., 1881).
- P. 405. *Terebratula cranium*. Bay of Biscay ('Travailleur' Exp.) 1011 fms.

- P. 405. *Terebratula septata*. N. Spain and off Marseilles ('Travailleur' Exp., 1881); 295 fms.  
 P. 409. *Terebratella spitzbergensis*. Barentz Sea; 128 fms.  
 P. 410. *Argiope capsula*. Jersey, at low water; specimens nearly twice the recorded size. See 'Annals & Magazine of Natural History,' December 1880, for a further account of the skeleton. There is no septum.  
 P. 411. *Platydia anomioides*. Bay of Biscay ('Travailleur' Exp.), North of Stornoway ('Knight Errant' cruise), off Cuba and West Indies ('Blake' Exp.); 88-645 fms.  
 ,, *Megerlia truncata*. Bay of Biscay ('Travailleur' Exp.); 236 fms.  
 P. 412. *Thecidea mediterranea*. G. Mexico ('Blake' Exp.); 163 fms.  
 P. 413. *Rhynchonella sicula*. N. Spain ('Travailleur' Exp., 1881).  
 P. 415. *Discina atlantica*. Off the coasts of N. Australia ('Challenger' Exp.); 200, 360, and 1400 fms.

## Part II., P. Z. S. 1879 :—

- P. 554. *Anomia ephippium*. Fossil. Miocene: Calabria (*Sequenza*).  
 P. 555. *Anomia patelliformis*. Fossil. Miocene: Calabria (*Seg.*).  
 ,, *Ostrea cochlear*. Fossil. Post-tertiary: Calabria.  
 P. 556. *Spondylus gussoni*. Gulf of Mexico, Bay of Biscay ('Travailleur' Exp.); 270-645 fms. Fossil. Post-tertiary: Calabria.  
 P. 557. *Pecten pes-felis*. Fossil. Post-tertiary: Calabria.  
 ,, *Pecten pes-lutrae*. The depth ranges from 5 instead of 10 fms.  
 ,, *Pecten sulcatus*. Fossil. Add Calabria.  
 P. 558. *Pecten philippii*. Cap Breton. Fossil. Post-tertiary: Calabria.  
 P. 559. *Pecten flexuosus*. Fossil. Post-tertiary: Sussex.  
 ,, *Pecten striatus*. 'Lightning' Exp. St. 5.  
 P. 560. *Pecten testæ*. Fossil. Pliocene and Post-tertiary: Calabria.  
 ,, *Pecten similis*. Range of depth to 645 fms. Fossil. Miocene: Calabria (*Seg.*). For synonymy of this and other species see 'British Conchology.'  
 ,, *Pecten groenlandicus*. Barentz Sea, Bay of Biscay ('Travailleur' Exp.); 128-645 fms.  
 P. 561. *Pecten fragilis*. Azores and Marion I. ('Challenger' Exp.), Bay of Biscay ('Travailleur' Exp.); 146-1375 fms.  
 ,, *Pecten vitreus*. North Sea, Bay of Biscay ('Travailleur' Exp.); 186-733 fms. Fossil. Add Calabria. *P. abyssorum* is not even a well-marked variety.  
 ,, *Amussium fenestratum*. Bay of Biscay ('Travailleur' Exp.), New England?; 86-1011 fms. Fossil. Add Calabria. This specific name has the priority of eleven years over *inæquisculptus*. Names cannot be arbitrarily changed because they are not so appropriate as those of later date. In the present instance the newer name is applicable to all the species of the genus. *Pecten hyalinus* is also a species of *Amussium*.



- P. 562. *Amusium hoskynsi*. North Sea; 106 fms. N. Spain and off Marseilles ('Travailleur' Exp., 1881), 295 fms.; New England (*Verrill*), 86 fms. Syn. *Pecten mammillatus*, M. Sars, *Pleuronectia dissimilis*, Seguenza.
- „ *Amusium lucidum*. Bay of Biscay ('Travailleur' Exp.), 600-733 fms.; Caribbean Sea and G. Mexico ('Blake' Exp.), 13-805 fms.
- „ *Lima sarsii*. North Sea; 135-217 fms. *Fossil*. Miocene and Pliocene: Calabria.
- P. 563. *Lima elliptica*. Bay of Biscay ('Travailleur' Exp.), 536-600 fms.; G. Mexico, 169 fms.
- „ *Lima subovata*. New England, 255-500 fms.
- P. 564. *Lima hians*. *Fossil*. Add Calabria.
- „ *Lima excavata*. *Fossil*. Add Calabria.
- P. 565. *Avicula hirundo*, var. ? New England, 65-192 fms.
- „ *Mytilus edulis*. Black Sea. *Fossil* (var. *ungulata*). Post-tertiary: Calabria.
- P. 566. *Mytilus adriaticus*. Black Sea; Jersey, living between tide-marks.
- P. 567. *Mytilus barbatus*. *Fossil*. Post-tertiary: Calabria.
- „ *Mytilus phaseolinus*. For 3000 read 300 fms.
- P. 568. *Modiolaria marmorata*. Bay of Biscay ('Travailleur' Exp.), 591 fms.; Firth of Forth, living at low water.
- „ *Modiolaria discors*. *Fossil*. Pliocene and Post-tertiary: Calabria.
- „ *Modiolaria subclavata*. Bay of Biscay ('Travailleur' Exp.); 591 fms. *Fossil*. Pliocene: Calabria.
- P. 569. *Crenella decussata*. Barbadoes ('Blake' Exp.); 100 fms. Specimen from Queen-Charlotte Islands measuring nearly twice the usual size.
- „ *Dacrydium vitreum*. Bay of Biscay ('Travailleur' Exp.), 1011 fms.
- P. 570. *Arca barbata*. *Fossil*. Post-tertiary: Calabria.
- „ *Arca lactea*. Bay of Biscay ('Travailleur' Exp.), 628 fms.; Bermuda.
- P. 571. *Arca noæ*. *Fossil*. Post-tertiary: Calabria.
- „ *Arca antiquata*. *Fossil*. Post-tertiary: Calabria.
- P. 572. *Arca obliqua*. *Fossil*. Post-tertiary: Calabria.
- „ *Arca glacialis*. Barentz Sea, 128 fms.; New England, southern coast, 85-500 fms. Professor Verrill considers *A. pectunculoïdes* a variety of the present species.
- „ *Arca pectunculoïdes*. New England, southern coast, 85-225 fms.; G. Mexico ('Blake' Exp.), 400-1568 fms.
- P. 573. Var. *septentrionalis*. Novaya Semblia, 210 fms.; Bay of Biscay ('Travailleur' Exp.), 552-733 fms. *Fossil*. Miocene: Calabria (*Seg.*).
- P. 574. *Leda pernula*. Barentz Sea, 128 fms.
- „ *Leda minuta*. 'Lightning' Exp. St. 5.
- P. 575. *Leda fragilis*. *Fossil*. Post-tertiary: Calabria.
- „ *Leda pella*. *Fossil*. Post-tertiary: Calabria.

- P. 576. *Leda messanensis*. Bay of Biscay ('Travailleur' Exp.), 367-1011 fms.; G. Mexico ('Blake' Exp.), 100-1002 fms.
- „ *Leda pustulosa*. Bay of Biscay ('Travailleur' Exp.), 1011 fms.
- „ *Leda frigida*. New England, 365 fms. *Fossil*. Miocene: Calabria (*Seg.*). Post-tertiary: Glasgow.
- P. 577. *Leda tenuis*. Bay of Biscay ('Travailleur' Exp.), 645 fms.
- P. 578. *Leda striolata*. Bay of Biscay ('Travailleur' Exp.), 733 fms.
- „ *Leda intermedia*. Barentz Sea, 128 fms.
- „ *Leda lucida*. North Sea, 100-320 fms.; Bay of Biscay ('Travailleur' Exp.), 552-1011 fms.
- „ *Leda pusio*, var. *laticor.* Bay of Biscay ('Travailleur' Exp.), 552-1011 fms.; G. Mexico, 638 fms.
- P. 579. *Leda sericea*. Bay of Biscay ('Travailleur' Exp.), 1011 fms.
- „ *Leda jeffreysi*. Bay of Biscay ('Travailleur' Exp.), 367-1011 fms; Palermo; off Ascension ('Challenger' Exp.). Var. *quadrangularis*, Dall. G. Mexico ('Blake' Exp.), 1568 fms.
- P. 580. *Leda micrometrica*. *Fossil*. Pliocene: Calabria.
- „ *Leda expansa*. Bay of Biscay ('Travailleur' Exp.), 645 fms.; New England?, southern coast.
- „ *Leda pusilla*. Off Malta; 310 fms.
- P. 581. *Nucula tenuis*. Barentz Sea, 128 fms.; G. Mexico ('Blake' Exp.), 175-450 fms.
- „ *Nucula aegensis*. Bay of Biscay ('Travailleur' Exp.), 367-645 fms. *Fossil*. Post-tertiary: Calabria.
- P. 582. *Nucula corbuloïdes*. Bay of Biscay ('Travailleur' Exp.), 367-1011 fms.
- „ *Nucula delphinodonta*. New England, southern coast. *Fossil*. Add Calabria.
- „ *Nucula tunidula*. Bay of Biscay ('Travailleur' Exp.), 552-733 fms.; North Sea, 100-365 fms.
- P. 583. *Nucula reticulata*. I find that this specific name had been preoccupied by Mr. Hinds for another species from the Philippine Isles (P. Z. S. 1843, p. 100); and I would therefore substitute that of *cancellata* for my species.
- „ *Nucula striatissima*. Bay of Biscay ('Travailleur' Exp.), 645 fms.
- „ *Nucula sulcata*. Bay of Biscay ('Travailleur' Exp.), 183-236 fms.; off Marseilles ('Travailleur' Exp., 1881), 295 fms.
- „ *Nucula nucleus*. 'Lightning' Exp., St. 5. Jersey, living between tide-marks. Var. *radiata*. Coast of Jutland.
- P. 584. *Pectunculus nummarius*. *Fossil*. Post-tertiary: Calabria.
- P. 585. *Limopsis aurita*. G. Mexico, 30-447 fms.; off Cuba, 450 fms. N. Spain and off Marseilles ('Travailleur' Exp., 1881), 295 fms. *Fossil*. Post-tertiary: Calabria. Syn. *Pectunculus corrugatus*, Calcare.

- P. 585. *Limopsis cristata*. Bay of Biscay ('Travailleur' Exp.), 586 fms.; New England, 65-155 fms.? G. Mexico ('Blake' Exp.), 640 fms.
- „ *Limopsis minuta*. Bay of Biscay ('Travailleur' Exp.), 536-733 fms.; off Marseilles ('Travailleur' Exp., 1881), 295 fms. New England, 115-500 fms. G. Mexico ('Blake' Exp.), 30-805 fms. *Fossil*. Post-tertiary: Calabria.
- P. 586. *Malletia obtusa*. Bay of Biscay ('Travailleur' Exp.), 536-733 fms.; North Sea, 135 fms.
- „ *Malletia cuneata*. Bay of Biscay ('Travailleur' Exp.), 600-733 fms. N. Spain and off Marseilles ('Travailleur' Exp., 1881), 295 fms.

## Part III., P. Z. S. 1881:—

- P. 693. *Pythina setosa*. The Marquis de Monterosato has satisfied me that Dunker's species is only the young of *Cypricardia lithophagella*; and I must therefore substitute for *setosa* the specific name given by Conti, viz. *caillati*, which is several years older than either of the names proposed by Dr. Fischer.

I take this opportunity of offering to the Marquis the best thanks of myself and other conchologists for his extremely careful and conscientious labour on the Mediterranean Mollusca, in respect not only of his critical examination of all the literature which has been published on the subject, but also of his exact comparison of typical specimens described by many authors in collections widely dispersed throughout Europe.

- P. 711. *Astarte*. I regret that I cannot agree with Mr. Edgar Smith (see 'Journal of Conchology' for 1881) as to the crenulation of the front margin in certain species being a sign of maturity, which involves the question of specific distinction.
- P. 715. *Venus multilamella*. Off Marseilles ('Travailleur' Exp., 1881); 295 fms.

## EXPLANATION OF THE PLATES.

## PLATE LXX.

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| Fig. 1. <i>Lyonsia formosa</i> , p. 930.   | Fig. 7. <i>Pholadomya loveni</i> , p. 934. |
| 2. ——— <i>argentea</i> , p. 930.           | 8. <i>Poromya nœroïdes</i> , p. 936.       |
| 3. <i>Pecchiolia subquadrata</i> , p. 932. | 9. <i>Nœra truncata</i> , p. 936.          |
| 4. ——— <i>insepulta</i> , p. 932.          | 10. ——— <i>sulcifera</i> , p. 937.         |
| 5. ——— <i>sinuosa</i> , p. 932.            | 11. ——— <i>gracilis</i> , p. 938.          |
| 6. ——— <i>angulata</i> , p. 933.           |  |

## PLATE LXXI.

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| Fig. 1. <i>Nœra bicarinata</i> , p. 939. | Fig. 7. <i>Nœra ruginosa</i> , p. 942. |
| 2. ——— <i>teres</i> , p. 939.            | 8. ——— <i>inflata</i> , p. 942.        |
| 3. ——— <i>depressa</i> , p. 940.         | 9. ——— <i>angularis</i> , p. 943.      |
| 4. ——— <i>contracta</i> , p. 941.        | 10. ——— <i>curta</i> , p. 943.         |
| 5. ——— <i>semistrigosa</i> , p. 941.     | 11. ——— <i>striata</i> , p. 944.       |
| 6. ——— <i>circinata</i> , p. 942.        |  |